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ABSTRACT

The Colorado State University Resources in Graduate Education (SURGE) program is described in this report. Since it is expected that not all the participants in a graduate engineering program will be able to attend university-based lectures, presentations are video-taped and transported to industrial plants, engineering offices, and other locations throughout the state. When combined with formal registration procedures and the administration of exams under the supervision of faculty affiliates at the remote locations, the system has provided a workable and suitable means of conducting graduate education for practicing engineers. Although many participants complete M.S. degrees, the program has also been shown to be of value for those practitioners who are interested in furthering education only in specialized topics. (CP)

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"Use of the Colorado SURGE System for Continuing Education for Civil Engineers"

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Use of the Colorado SURGE System for Continuing Education for Civil Engineers

The Colorado SURGE (Colorado State University Resources in Graduate Education) system offers great flexibility in use and operation. Started by Dean L.V. Baldwin in the fall of 1967 as an experimental program, Colorado SURGE has evolved into a viable, ongoing graduate education program. Live lectures are presented to the on-campus class in a room which is equipped with three television cameras, three monitors, and two control consoles. One console controls the main camera and sound system, is located in the rear of the classroom and is generally operated by a teaching assistant. The second console is located at the lecture desk and enables the lecturer to choose the camera to be used for any portion of the lecture and also to control the overhead camera which serves the same function as an overhead projector but with far superior performance characteristics.

The operator controlled camera in the rear of the room covers the professor, the chalkboard and any portion of the front of the room. Provisions are made for the projection of slides and other materials. Slides are projected onto a screen which is photographed by the main camera. Opaques, notes, transparencies and written materials in general are picked up through the overhead camera.

The instructor chooses the camera picture to be transmitted from the lecture room. This signal is shown on the room monitors and is transmitted to a central videotaping facility in the basement of the Social Science building where multiple tapes can be recorded simultaneously.

These tapes can then be shipped to remote locations for use by off-campus classes or they can be played back to at least twenty-three different locations on campus.

In the regular SURGE operation, the class tapes are transported to industrial plants, engineering offices, and other remote locations throughout the state. When combined with formal registration procedures and the administration of exams under the supervision of faculty affiliates at the remote location, the system has provided a workable and very suitable means of conducting graduate education for practicing engineers. By now, a large number of M.S. degrees have been granted through this system. For those practitioners who do not wish to pursue a degree program, the system provides a convenient and economical way to obtain further education in specialized interests from the very competent and capable university faculty.

Since the tapes are made live with no attempt at a "professional" type of production, they are not retained. After a period of time sufficient to allow the off-campus students to review the lecture, the tape is returned to the Office of Educational Media and something else is recorded on it.

The University also has all of the necessary studio facilities for the professional production of tapes. These techniques have been used in the preparation of a number of on-campus classes outside of engineering. They are also being used for the production of various tapes to be used in off-campus continuing education programs that are not being used for credit. Effective short courses can be packaged and distributed to offices throughout the country - indeed, throughout the world! CSU

is currently packaging a complete hydrology course in Italian to be used by one of the Italian universities. Negotiations are under way to do the same thing in other languages with other countries.

The potential for continuing education does not stop with the formal course format of the regular SURGE operation or the on-campus preparation of specialty courses. Recording equipment with the capability of producing good quality tapes in almost any location is readily available. Such equipment can produce tapes under a very wide variety of lighting and operating conditions. With this type of equipment, a great many concepts can be introduced.

It is now possible to record field operations for use in office programs, laboratory experiments for classroom demonstrations and all kinds of activities which might be of interest in educational programs. Such programs can provide an office staff with a measure of practical applications experience that might otherwise take years to develop. The camera can get right into the middle of things and see what is going on where a person or group of people could not. Examples of this are very common in the tapes of surgery that are used in the veterinary medicine program. Other examples include the remote T.V. camera logging of sewers, caisson borings, and soil sampling borings. Not only can the data be recorded and incorporated into the educational program but its acquisition for any purpose can be accomplished with greatly reduced difficulty and danger for the personnel involved. It is far more acceptable to send a camera down 80 feet in a thirty-inch boring to inspect the subsurface conditions than it is to lower a person. Moreover, the taped record is visual and permanent. It can be interpreted by several experts

and it can be re-played any number of times. Data such as that obtained in logging an 8 inch sewer could not be as completely acquired in any other manner. Infiltration sources, breaks, and all kinds of damage or incipient malfunction may be charted, recorded, and later referred to in the application of a repair program. Thus, much of the effort expended may find double utilization in professional practice and in educational programs. This can be particularly useful in organizations having widespread activities of a complex or specialized nature. Head office monitoring of remote or foreign construction jobs is one very obvious application.

Tape playback equipment - even in color - is relatively inexpensive and easy to obtain. Combined with any T.V. set or monitor, it provides a suitable installation in a small amount of space and in widely varying lighting conditions. Rental equipment is readily available in most cities if the installation is to be short-lived.

Once the tape is on site, it can be played at a time or times convenient to the audience. Unlike broadcast T.V., no fixed schedule need be observed and multiple showings may be arranged to accomodate work or travel schedules, sickness, or other unusual circumstances. Replays may be scheduled for those who wish to review the presentation.

In summary, the taped T.V. system such as used in Project Colorado SURGE has an almost unlimited capacity to serve the continuing education needs of any kind of group. It provides an inexpensive, highly flexible approach that can be taken to the student instead of having to bring the student to it.